

TROPICAL DISTURBANCES OF AUGUST 1940

By JEAN H. GALLENNE

There were three tropical disturbances in the North Atlantic and the Gulf of Mexico during the month of August. The earliest, that of the 2d-10th, was confined to the Gulf of Mexico. The second, that of the 5th-17th, was of the West Indian type and its course lay over the North Atlantic ocean. The third originated over the North Atlantic Ocean rather late in the month and will be described in the September REVIEW.

DISTURBANCE OF AUGUST 2-10

This disturbance had its inception in the southern end of an extra-tropical low-pressure trough which moved off the coast of South Carolina and Georgia. A wave developed on August 2, off Jacksonville, Fla., and moved southwestward across Florida into the northeast portion of the Gulf of Mexico by the 3d, where a rather shallow low 1,012.5 millibars (29.90 inches), with definite cyclonic wind circulation was charted. The disturbance moved steadily west-southwestward with increased intensity during the next 24 hours and ships' reports indicate that it was centered on the morning of August 4 near latitude 28° N., and longitude 87° W., from where it progressed in a slight curve to the right during the 4-5th.

Heavy rain squalls and fresh to strong shifting gales were encountered by vessels in the central and north-central portions of the Gulf of Mexico on August 5, 1940. At 12:50 a. m., of the 5th, the American S. S. *Connecticut*, near latitude 26°45' N., and longitude 88°06' W., reported a barometer reading 1,004 millibars (29.64 inches), strong gales and rough sea; the wind increased to force 11 (Beaufort scale) shortly after 2 a. m. This is the highest wind of record reported from any vessel in connection with this disturbance. At 7 a. m., on August 5, the center of the storm was charted about 110 miles southeast of Port Eads, La. The American motor vessel *Rhode Island* at 6:07 p. m., of the same day met south-southwest winds of force 9, with rough sea and very heavy rain.

The disturbance continued in a west-northwest direction during the 6th which carried the center south of the Louisiana coast toward Texas, where it passed inland on August 7, just east of Sabine. The storm at this point was of small diameter, with the path of hurricane winds about 20 miles wide in the Port Arthur-Sabine area.

The following table gives the recorded maximum wind velocities and the lowest pressures at stations on and near the Gulf coast, during the passage of the disturbance.

Station	Wind	Time	Lowest pressure, inches	Time
Apalachicola, Fla.	32-NE	5th-3:43 a. m.	29.82	4th-5:30 p. m.
Pensacola, Fla.	34-SE	5th-7:38 a. m.	29.82	4th-6:00 p. m.
Mobile, Ala.	29-NE	6th-6:01 a. m.	29.84	5th-3:00 a. m.
New Orleans, La.	32-E	6th-4:55 a. m.	29.71	5th-2:00 a. m.
Burrwood, La.	51	6th-7:00 a. m.	29.40	6th-6:15 a. m.
Lake Charles, La.	50-E	6th-9:30 a. m.	29.40	6th-3:00 a. m.
Port Arthur, Tex.	32-NE	7th-12:47 p. m.	28.87	7th-7:30 a. m.
Galveston, Tex.	34-NW	7th-4:10 p. m.	29.50	7th-1:15 p. m.
Houston, Tex.	30-NW	7th	29.55	7th-7:00 p. m.

An extract from the report of E. W. Torrence, meteorologist in charge at Port Arthur, Tex., follows:

The barometer began a definite downward movement as early as 10 a. m. of the 6th. The fall was rapid from 8 a. m. to the low point at 12:15 p. m. Recovery immediately after the minimum

pressure was even more rapid than the fall. At Port Arthur the lowest pressure for this station was 977.7 millibars (28.87 inches), considerably lower than the previous low barometric pressure reading of 994.5 millibars (29.37 inches) recorded on October 16, 1923. The 5-minute maximum was 82 miles an hour from the northeast at 11:47 a. m., and the 1-mile extreme was 91 miles per hour. The total rainfall from midnight of August 6-7 to noon of the 8th was 5.87 inches.

During the evening of August 7, the storm recurved to the right with accompanying marked increase in rainfall over southwest Louisiana. At 7 a. m. of the 8th, it was centered a short distance northeast of Houston, Tex., with decreased intensity. For the next 48 hours the disturbance moved rather slowly in a north-northeasterly direction, dissipating on the evening of August 10 in north-central Arkansas.

From reports at hand, indications are that only one death resulted from the storm. A Chinese fisherman was drowned in Barataria Bay, north of Grand Isle. Losses in crops, roads, and property damage due to wind and heavy rainfall, are estimated at more than \$1,743,550.

Passage of this hurricane from the eastern Gulf of Mexico was completely covered by warnings and advisories by the Weather Bureau forecast center at New Orleans, La.

DISTURBANCE OF AUGUST 5-17

The morning charts of August 5 showed some indications of a slight disturbance centered between St. Martin and St. Thomas Islands. Severe squalls of 44 miles an hour were recorded at 10:04 a. m. at San Juan. By 6 p. m. of the 5th, the depression was located a short distance north of Mona Passage, having moved very rapidly in a west-northwestward direction during the preceding 10 hours. The Dutch motor vessel *Pygmalion*, near latitude 19°36' N. and longitude 65°48' W., at 5 p. m. of August 5, reported fresh easterly gales with barometric pressure 1,012.5 millibars (29.90 inches).

Cloudy weather with high winds and moderate to rough seas was encountered by ships in the vicinity of the path of the disturbance as it continued to move in a west-by-north direction during the 6th. The center passed a short distance to the south of Turks Island at noon of August 6, with deepening pressure, 1,003 millibars (29.63 inches) accompanied by winds of 30 miles an hour.

During the next 3 days the disturbance showed little tendency to increase in intensity as it moved to the northward. It was located near latitude 29°41' N., and longitude 74°15' W., on the morning of August 9. At 4 a. m. of August 10, the American tanker *Meton*, near latitude 32°12' N., and longitude 77°42' W., recorded a barometer pressure reading of 1,008.5 millibars (29.81 inches), with overcast squally weather, east winds of force 8, and high seas.

The first indications that this storm had developed to hurricane intensity were received from the American S. S. *Maine*, giving her noon position as approximately 32°03' N., and longitude 77°18' W. The ship's daily journal of August 10th shows that the vessel met east-southeast wind, force 10 increasing to full hurricane strength at 4 p. m. (local ship's time), with very high and rough east-southeasterly sea, large heavy swell and poor visibility. The barometer fell very rapidly until about 8 p. m., when it became steady and began to rise slowly.

The hurricane crossed the coast at about 4 p. m. of August 11, near Beaufort, S. C., where moving inland,

its course curved to the westward, passing just north of Savannah, Ga., between 5 and 6 p. m. on the same day. A report of the storm by the forecaster at Jacksonville Fla., Grady Norton, includes the following:

The lowest pressure at Savannah was 28.78 inches (974.7 mb.) and highest wind 73 miles per hour from north, just before passage of center. A lull occurred from 5 to 6 p. m., during which the wind dropped to 9 miles per hour, then shifted to south and increased to whole gale. Winds of hurricane force were experienced from the Savannah area nearly to Charleston, (Charleston maximum velocity 66 miles per hour for 5 minutes) a distance of about 90 miles. Damaging gales extended north of Charleston to Georgetown and south of Savannah to Brunswick. Tides were very high north of the center, Charleston reported 10.7 feet above mean low tide.

Property damage amounted to about \$1,500,000 at Charleston and nearby beach resorts, nearly \$1,000,000 in the Savannah area; and about \$500,000 elsewhere between these places, much of which was at Beaufort, S. C. The total damage to property along the coast was, therefore, about \$3,000,000. Reports are somewhat confused as to loss of life. The larger communities (Savannah, Beaufort, and Charleston) had very few casualties; none occurred at Charleston and Beaufort and only two at Savannah, and one of these was by heart failure due to fright, rather than injury. In the coastal area between Savannah and Charleston a considerable number lost their lives. Early press reports indicated 35 dead but some at first thought dead were later found safe and the exact number may never be known, but it is believed to be not more than 20 for the entire coastal area.

The coast is indented by many inlets, islands, marshes, etc. Some of these islands are inhabited by Negroes living in flimsy shanties or houseboats, without communication facilities and hard of access. The small number of deaths under these conditions is considered remarkable, and indicates the effectiveness of the Coast Guard and other agencies in reaching these remote people with the warnings and getting most of them to places of safety in advance of the storm. In addition to these rather inaccessible places, there are a number of popular beach resorts ordinarily visited by thousands of people over week-ends. A particular attraction this Sunday was to be a yacht race at Charleston. The

small crafts were moved to safe anchorage and the beaches cleared of people. It will be seen, therefore, but for the effectiveness of the warnings, the loss of life and property would have been much greater.

Aside from the doubtless saving of many lives, the money value of property saved was several hundred thousand dollars, probably \$500,000 in small craft and automobiles alone. It will be seen, therefore, that the value of property saved in this one storm would be sufficient to maintain the entire hurricane warning service for many years.

After leaving the coast the storm moved slowly to the southern Appalachian Mountain region attended by torrential rains and disastrous floods in many sections of Georgia, Tennessee and the Carolinas. Press reports indicate more than 30 deaths and property damage of many millions of dollars in these flood areas, as well as tremendous crop damage. This indicates that the storm caused far more damage and destruction by the floods than by the hurricane winds it gave in the coastal sections.

A preliminary report of river and flood conditions associated with this disturbance will be found elsewhere in this REVIEW.

During the afternoon of August 11, a sea-level pressure reading of 974.7 millibars (28.78 inches) was recorded at Savannah, Ga. This is the lowest ever recorded at the Weather Bureau Office at that place.

During the next 4 or 5 days, as the storm moved overland, it diminished rapidly in intensity and its progressive motion was rather erratic. Its positive identity was lost on August 15.

Timely and accurate warnings were issued from the Weather Bureau Offices at San Juan, Jacksonville, and Washington, D. C., covering the movements of this hurricane.

Approximate tracks of both the disturbances described in this article are shown on the accompanying chart.

